

# DEVELOPING TEACHING EFFECTIVENESS FRAMEWORK THROUGH STUDENT RATINGS OF TEACHERS' ATTRIBUTES IN AGRICULTURAL UNIVERSITY

**S. K. KASHYAP<sup>1</sup>, GIRIJESH SINGH MAHRA<sup>2</sup> & SHWETA GUPTA<sup>3</sup>**

<sup>1</sup>Agricultural Communication, G. B. Pant University of Agriculture & Technology, Uttarakhand, India

<sup>2</sup>Agricultural Communication, G. B. Pant University of Agriculture & Technology, Uttarakhand, India

<sup>3</sup>Organizational Behaviour & Human Resource Management, Indian Institute of Management Indore,  
Madhya Pradesh, India

## ABSTRACT

*As teaching effectiveness is crucial for achieving academic excellence, the attributes of teachers contributing towards teaching effectiveness are worth exploring. This study examines the perception of 310 B. Sc. Agriculture students towards attributes of teachers who have taught them. Accordingly, teachers are categorized based on scores of attributes obtained through student ratings, then association between teacher attributes and overall teaching effectiveness is found, and finally a teaching effectiveness framework is designed based on attributes, which were significantly associated with teaching effectiveness. It is seen that majority (>50%) of students rated all attributes under medium category with 44.83% and 40.33% of students rating overall teaching effectiveness under high and medium category respectively with 14.84 % under low category. In addition, all attributes were found to be positively correlated with overall teaching effectiveness. Out of 30 items under all attributes, 25 items which were significantly associated with teaching effectiveness were included in teaching effectiveness framework. In light of the findings, we give suggestions for teachers regarding their teaching attributes as perceived by students.*

**KEYWORDS:** Teaching Effectiveness, Teaching Effectiveness Framework, Teacher's Attributes & Student Ratings

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## INTRODUCTION

Ensuring high teaching quality in agricultural education has been an important concern, in order to develop graduates with appropriate skills and attitude to take the fate of agriculture in the right direction, and therefore in long run ensuring food security for all (FAO 2014). Keeping a vigil on the teaching quality has been an equal concern for the regulatory bodies on higher education throughout the world, for which several measures have been adopted such as students' feedback, self-appraisal, peer review, microteaching, outcome analysis, 360 degree feedback, performance appraisal by the seniors and administrators etc. The extant literature on effective teaching and learning styles, tools, or technology, has not considered agricultural education within its sample (Cano et al., 1992), and therefore understanding agricultural education from this lens becomes important (McKemand Velez, 2015). An insight into the theoretical perspectives of teaching and learning helps in improving teaching quality, and hence teaching effectiveness. Creating and maintaining the effectiveness of teaching is thereby essential for sustainability of the agricultural education programs (Roberts and Dyer, 2004).

Teaching effectiveness is a well-researched construct under various contexts (Berk, 2013). However, owing to the changing assessment methods, availability of sophisticated statistical tools, accessibility to student information, better understanding of this concept is demanded (Stronge et al., 2011). Furthering this demand and defining the scope of this study, student ratings of teaching effectiveness will be taken to develop a framework of teaching effectiveness in the context of agricultural education. The validity and utility of student perspective of teaching effectiveness requires evidence in various contexts (Galbraith et al., 2012). Also, it is imperative to understand its utility and associated bias. This would be further supportive in designing of student evaluation systems in an efficient way (Marsh and Roche, 1997). Thus, looking into the requirements of establishing the validity of student evaluation of teaching effectiveness, this study will contribute in enhancing the understanding around the concept of teaching effectiveness as well as related aspects of student evaluations around it.

## **REVIEW OF LITERATURE**

### **Teaching Effectiveness**

Several decades of research has established the significance of the teaching effectiveness construct in the literature of teaching and learning. According to Lin, Xie, Jeng, and Huang (2010), teaching effectiveness primarily constitutes two concepts, namely self-effectiveness and effective teaching. Self-effectiveness refers to the subjective evaluation of the teaching ability by the teacher itself, which has an influence over the student learning outcomes. While effective teaching can be described as the efficient usage of knowledge, gaining familiarity of pedagogical tools and technology, generating expertise over course content, creating a conducive learning environment, keeping students motivated, and engendering excellence in student performance (Lin et al., 2010). In addition, an effective teacher can also be defined as the one who is able to generate positive learning outcomes in cognitive, behavioral, and affective domains (Anderson, 1979). Though teaching effectiveness can be assessed through several dimensions, yet those identified as contributing most towards better teaching quality include instructional effectiveness, appropriate student learning assessment, positive classroom environment, and the personal traits of the teacher (Stronge et al., 2011). Teaching effectiveness is thus considered as a complex and an extremely personal process including a range of variables (Galbraith et al., 2012). Teaching effectiveness provides evidence which are of importance in academics. It provides support for formative decisions (related to improvement in teaching quality) and summative decisions (including overall performance of a teacher and promotion related verdicts) (Berk, 2005). The outcomes of teaching effectiveness might be impactful in short-term as well as long-term learning processes, which are generally contingent on the overall teaching-learning model practiced in an academic institute (Seidel and Shavelson, 2007).

### **Student Ratings of Teaching Effectiveness**

Student ratings are being widely used for evaluating teaching effectiveness (Chen and Hoshower, 2003). The ratings are captured through a questionnaire, which usually measures teaching behaviors and teaching style (Chen and Hoshower, 2003). The prominent characteristics of student ratings include multidimensionality, stability and reliability, function of the instructor teaching the course instead of the course which is being taught, validity compared to other indicators, not easily impacted by potential biases, and high utility for teachers, administrators, and researchers (Marsh and Bailey, 1993). Overall, it provides a formative response to a faculty over its teaching pattern, course content, and classroom management (Chen and Hoshower, 2003). Distinct components which reflect the multidimensionality of teaching effectiveness must be included in the evaluation proforma of the student. Multidimensionality is not only useful from the

point of view of utilitarian assessment; instead it helps in generating a sophisticated, realistic preview of teaching by any instructor (Marsh and Roche, 1997).

Student ratings have been considered to be providing reliable evidence in context of teaching quality (Marsh and Bailey, 1993). Despite some contradictory findings, the ratings have suggested consistent evidence of quality for a particular teacher across courses and across time (Murray, 1983). Student ratings to capture teaching effectiveness have also been extensively analyzed in the extant literature (Berk, 2013). Apart from playing a key role in assessing teaching quality and thereby bringing improvement in teaching, it has also been used for making faculty career advancement/personnel decisions as discussed earlier (Galbraith et al., 2012; Marsh and Roche, 1993; Rockoff and Speroni, 2010). Literature has even documented the outcomes of student ratings of teaching effectiveness in terms of student motivation, learning, study strategy, and course selection (Chen and Hoshower, 2003; Marsh and Roche, 1993; Marsh and Roche, 1997). The outcome in terms of improved teaching quality holds the greatest significance for various stakeholders within the academic setting (Marsh and Roche, 1993).

Student ratings are dominant, but over last few decades other indicators have also gained attraction of both practitioners and researchers (Rockoff and Speroni, 2010). The other sources include peers, self-rating, videos, alumni, administrators, student interviews, teaching scholarships, awards, learning outcomes, and teaching portfolio (Berk, 2005). Instances where teaching effectiveness was evaluated by sources other than students such as alumni, faculty colleagues and classroom teaching experts, the ratings were consistent with those of the students (Murray, 1983). However, the research findings affirm the crucial role of student ratings, as sufficient support for the validity of other indicators could not be gathered (Marsh and Roche, 1997).

### **Factors Affecting Teaching Effectiveness**

Teaching effectiveness has been attributed to a large number of factors, which usually include teacher personality factors, environmental factors, course related factors, and system related factors. Blattner and Baldwin (2003) inferred that the personal characteristics of the teacher was reported to be the most prominent factor (67%) in teacher evaluation as perceived by the students followed by the teachers' knowledge of the subject (57%), and preparedness of the teacher to conduct the class (53%). Some other studies have pointed out teacher preparedness to be highly significant (Darling-Hammond et al., 2002; Darling-Hammond et al., 2005; Harper et al., 1990). Another important aspect includes the pedagogy used in the classroom, which determines actual learning as well as student rating (Ball, 2000). Roberts and Dyer (2004) also found that the way content is delivered, the instruction methods followed in the classroom impact the student ratings of teaching effectiveness the most. Thus, pedagogy also depicts the classroom behavior of the teacher. The pedagogical factor is further substantiated by findings of Murray (1983), who states that teachers vary on exhibiting the low-inference teaching behaviors among which enthusiasm, subject clarity, and rapport with students are significantly related with teaching quality (Murray, 1983). Those teachers higher on these three aspects, are supposedly higher on student ratings also. Therefore, Murray (1983) concludes that student rating is impacted more by classroom behaviors than external factors such as teacher personality or popularity. Further, teacher attitude towards students is also taken up by previous studies in various forms. For enhancing the attention span of the student, expressive behavior serves better. It communicates the enthusiasm of the teacher, and simultaneously impacts other critical teaching behaviors as well, which overall affect teaching quality (Murray, 1983). Another aspect of teacher-student relationship includes teacher immediacy. Teacher immediacy indicates those communication behaviors which increase the understanding as well as non-verbal

interaction between the teacher and the student (Anderson, 1979). It is considered as a strong predictor of teaching effectiveness. It also provides insight into formulation of student perception towards a teacher (Anderson, 1979).

## METHODS

The study evaluates the teaching effectiveness of the university teachers of different disciplines in agriculture. It is important to understand the traits and qualities of the teachers, which are looked upon by the students as their strength of teaching, whereas it is equally important to identify the segments of teachers' personality attributes and pedagogical approaches where students are not satisfied. Thus, to evaluate the teachers' characteristics, their impact on students' learning and overall teaching effectiveness following research questions of the study were designed.

- What are the different categories of teachers based on scores of teacher's attributes obtained through student ratings?
- Is there any association between teacher's attributes and overall teaching effectiveness?
- Can we develop Teaching Effectiveness Framework based on teacher's attributes which are significantly associated with teaching effectiveness?

## Sampling and Location

The study is focused on assessment of teaching quality of university teachers in agricultural education setup, and therefore all the graduating students of College of Agriculture of G. B. Pant University of Agriculture & Technology, Pantnagar who were registered for B. Sc. Agriculture degree programme, were taken as respondents. The sample size was 310 (n=310). A scientifically developed and pre-tested questionnaire was administered for the study. The students were completing the semester with average 22 credit loads and had taken regular classes with different teachers in registered courses. The students had taken 54 classes in 3 credit courses, 36 classes in 2 credit courses and 18 classes in 1 credit course with a particular teacher. All the courses registered during the semester along with all the teachers teaching during the semester were taken under the study. The teachers were from department of Agronomy, Horticulture, Soil Science, Entomology, Plant Pathology, Vegetable Science, Meteorology, Plant Breeding, Food Science, Agricultural Economics and Agricultural Communication.

## Measurement of Variables

Based on literature review and focused grouped discussion, total eight attributes (seven teacher attributes and one attribute related to the course being taught) were identified for inclusion in the student evaluation questionnaire. It included teacher preparedness, teaching pedagogy of course, teacher's attitude towards students, teacher's attitude towards teaching, teacher's creativity, teacher's fairness, teacher's availability to students, and course characteristics. A self-administered questionnaire was designed to assess the agreement or disagreement of the students toward these attributes for all the teachers who had taken their classes during the semester. The instrument was rated on a five-point ordinal scale, ranging from 1 (strongly disagree) to 5 (strongly agree).

Table 4 shows different items under teacher's attributes and course characteristics. Teacher preparedness consists of 5 items (item 1-5) with the maximum attainable score of 300 and minimum attainable score of 60, teaching pedagogy of course consists of 6 items (item 6-11) with the maximum attainable score of 360 and minimum attainable score of 72, teacher's attitude towards students consists of 4 items (item 12-15) with the maximum attainable score of 240 and

minimum attainable score of 36, teacher's attitude towards teaching consists of 2 items (item 16 and 17) with the maximum attainable score of 120 and minimum attainable score of 24, teacher's creativity consists of 3 items (item 18-20) with the maximum attainable score of 180 and minimum attainable score of 36, teacher's fairness consists of 2 items (item 21 and 22) with the maximum attainable score of 120 and minimum attainable score of 24, teacher's availability to students consists of 3 items (item 23-25) with the maximum attainable score of 180 and minimum attainable score of 36, and finally course characteristics consists of 5 items (item 26-30) with the maximum attainable score of 300 and minimum attainable score of 60. The dependent variable overall teaching effectiveness was measured using the last three items (item 31-33), and the items measured on a 5-point Likert response format with anchors from 1 (strongly disagree) to 5 (strongly agree).

Teachers were categorized under high, medium and low on the basis of mean and standard deviation of scores obtained by totaling of items scores under each attribute. Table 1 shows categorization criteria of teachers as high, medium and low on the basis of student rating on selected attributes.

**Table 1: Values for Categorization of Teachers as High, Medium and Low on the Basis of Student Rating on Selected Attributes**

S. No.	Attributes	High [Greater than (Mean +S. D.)]	Low [Smaller than (Mean –S. D.)]
1.	Teacher Preparedness	233.82	151.77
2.	Teaching Pedagogy Of Course	254.55	152.03
3.	Teachers Attitude Towards Students	177.93	110.21
4.	Teachers Attitude Towards Teaching	90.18	54.44
5.	Teachers Creativity	128.53	78.01
6.	Teachers Fairness	108.89	34.65
7.	Teachers Availability To Students	127.81	74.49
8.	Course Characteristics	214.35	135.83

(Medium category values lies between (Mean + S. D.) and (Mean – S. D.)

## Data Analysis

The data collected was analyzed using R program. Descriptive analysis used frequency and percentage for categorization of teachers on the basis of various attributes. Three types of data analysis were used: Pearson Moment Correlation, ANOVA and multiple hierarchical regressions to find associations of items and teachers attributes with overall teaching effectiveness and to test the significance. The significance level was determined at probability levels of 1 % and 5%.

## RESULTS

### Categorization of Teachers

It is evident from Table 2 that among all the attributes, four attributes namely teacher preparedness, teacher's fairness, teaching pedagogy of course, and course characteristics were ranked highest by students under high category. 40.96% of students rated teacher preparedness of teachers under high category followed by teacher's fairness (32.58%), teaching pedagogy of course (31.29%) and course characteristics (30.32 %). Among these four attributes, 60.98 % of students rated course characteristics under medium category followed by teacher's fairness (57.10%), teaching pedagogy of course (53.23%), and teacher's preparedness (47.75%). Also, the percentage of students rating these four attributes under low category was considerably less with teaching pedagogy of course at 15.48%, followed by teacher preparedness

(11.29%), teacher fairness (10.32%), and course characteristics (08.70%). Thus, majority of students rated these four attributes under high and medium category when summed together; teacher preparedness (88.70%), teacher's fairness (89.68%), teaching pedagogy of course (84.52%), and course characteristics (91.30 %), and significantly lower number of students rated these attributes under low category. This indicates that majority of teachers prepare lecture schedules, regularly check up class attendance, arrive on time and leave on time, completes the entire course content, demonstrate good knowledge of subject, utilize the knowledge gained through wide reading, deliver the subject matter effectively, provide additional material, make efficient use of multi-media tools, and depict fairness in grading. It also signifies that majority of students believes that the given course integrates theoretical concepts with practical applications, assignments and examination covers the materials presented in the course, course material is relevant and updated, and credit hour allotted to the course is sufficient.

Table 2 also suggests that a lower number of students ranked the remaining four attributes (teacher's attitude towards students, teacher's attitude towards teaching, teacher's creativity and teacher's availability to students) under high category and a noticeably higher number of students ranked them under the low category. The values for each of them depict so, teacher's attitude towards students' (16.78% and 20.96%), teacher's availability to students (16.12% and 15.80%), teachers creativity (15.48% and 32.58%), and teachers attitude towards teaching (14.19% and 22.90%). This signifies that the students believe that teacher responsiveness towards student questions, teacher's sensitivity, attentiveness and respect towards students, teacher's enthusiasm, teacher's receptiveness towards new ideas, teacher's ability in directing discussion, and teacher's availability besides scheduled classes are comparatively lower. Overall, majority (>50%) of students rated all attributes under medium category with 44.83% and 40.33% of students rating overall teaching effectiveness under high and medium category respectively with 14.84 % under low category.

**Table 2: Distribution of the Teachers as High, Medium and Low on the Basis of Student Ratings on Selected Attributes Using Frequency and Percentage Basis**

(n=310)

S. No.	Attributes	High		Medium		Low	
		Frequency	%	Frequency	%	Frequency	%
1.	Teacher Preparedness	127	40.96	148	47.75	35	11.29
2.	Teaching Pedagogy of Course	97	31.29	165	53.23	48	15.48
3.	Teachers Attitude Towards Students	52	16.78	193	62.26	65	20.96
4.	Teachers Attitude Towards Teaching	44	14.19	195	62.91	71	22.90
5.	Teachers Creativity	48	15.48	161	51.94	101	32.58
6.	Teachers Fairness	101	32.58	177	57.10	32	10.32
7.	Teachers Availability to Students	50	16.12	211	68.08	49	15.80
8.	Course Characteristics	94	30.32	189	60.98	27	08.70
9.	Overall teaching effectiveness	139	44.83	125	40.33	46	14.84

#### Association between Effectiveness Attributes and Overall Teaching Effectiveness

Pearson correlations were computed between all attributes and overall teaching effectiveness to test for direction and strength of the correlation. All attributes were found to be positively correlated with overall teaching effectiveness. Table 3 shows Pearson correlation coefficients between all attributes and overall teaching effectiveness. Multiple regression analysis indicates that two attributes, teacher preparedness and course characteristics were significantly associated with overall teaching effectiveness at 0.01 % level. While six other attributes, namely teaching pedagogy of course, teacher's attitude towards students, teacher's attitude towards teaching, teacher's creativity, teacher's fairness, and teacher's availability to students were significantly linked with overall teaching effectiveness at 0.05 % level. Thus, it can

be concluded that all attributes are significantly associated with overall teaching effectiveness Table 3).

**Table 3: Association between Various Attributes and Overall Teaching Effectiveness**

(n=310)					
S. No.	Attributes	Mean	S. D.	Pearson Correlation Coefficient (r)	p Value
1.	Teacher Preparedness	192.80	41.02	0.20711	0.0046**
2.	Teaching Pedagogy Of Course	203.28	51.27	0.13776	0.0285*
3.	Teachers Attitude Towards Students	144.07	33.86	0.16748	0.0243*
4.	Teachers Attitude Towards Teaching	72.31	17.87	0.13130	0.0384*
5.	Teachers Creativity	103.27	25.26	0.17738	0.0221*
6.	Teachers Fairness	71.77	37.12	0.13729	0.0483*
7.	Teachers Availability To Students	101.15	26.66	0.14397	0.0337*
8.	Course Characteristics	175.09	39.26	0.16305	0.0035**

\*\*significant at 0.01 % level, \*significant at 0.05 % level

## DISCUSSIONS

The findings of the study are consistent with previous research, especially in case of support for teacher preparedness (Darling-Hammond et al., 2002; Darling-Hammond et al., 2005; Harper et al., 1990), teaching pedagogy of course (Ball, 2000; Roberts and Dyer, 2004), teacher's attitude towards students, and teacher's attitude towards teaching (Blattner and Baldwin, 2003; Murray, 1983; Murray, 1987). Some attributes have not been largely empirically examined in previous studies such as teacher's creativity, teacher's fairness, and teacher's availability to students, and course characteristic. Therefore, this study contributes in providing empirical evidence for these attributes within the agricultural education setting.

Studies have revealed that the students who spend the semester with the course and observe the teachers throughout semester, efficiently evaluate the course content and the overall teaching performance (Thealland Franklin, 2001). Thus, based on the above findings a teaching effectiveness framework is designed. For developing the framework, each item under all attributes was checked for significant association with overall teaching effectiveness. Table 4 represents all items under various attributes and their association between overall teaching effectiveness. 'The teacher is always well prepared for each class' (item 4), 'the syllabus clearly states course objectives, requirements, procedures and grading criteria' (item 26) and 'the assignments and exams cover the materials presented in course' (item 28) were significantly associated with 'overall teaching effectiveness' at 0.01 % level. 'The teacher provides additional material apart from textbook' (item 9), 'the teacher give citations regarding current situation with reference to Indian context' (item 10), 'the teacher organizes remedial teaching in order to overcome students weakness' (item 24), 'the teacher extends full cooperation in co-curricular activities and make constructive contribution for further improvement' (item 25), and 'the credit hour allotted to the course are sufficient' (item 30) were not significantly associated with overall teaching effectiveness, and thus dropped from teaching effectiveness framework, while rest of the items were significantly associated with 'overall teaching effectiveness' at 0.01 % level and included in teaching effectiveness framework.

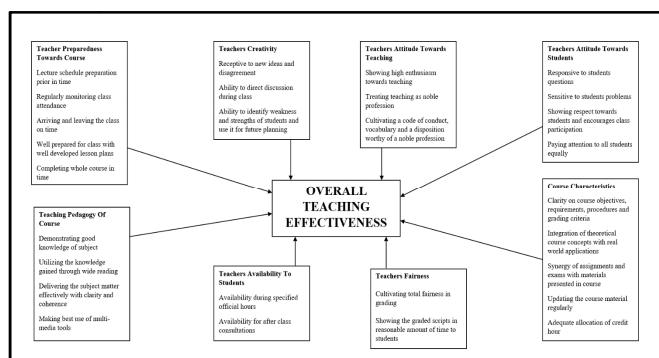
**Table 4: Items under Various Attributes and their Association between Overall Teaching Effectiveness**

(n=310)				
S. No.	Item	Mean	S. D.	p value
1.	The teacher prepares lecture schedule for students in the beginning of semester	37.23	9.47	0.0236*
2.	The teacher regularly checks up class attendance	40.26	7.35	0.0145*

3.	The teacher arrives on time and leaves on time	39.61	8.47	0.0456*
4.	The teacher is always well prepared for each class	38.45	7.13	0.0013**
5.	The teacher completes the whole course	37.59	6.69	0.0469*
6.	The teacher demonstrates good knowledge of subject	41.25	4.59	0.0321*
7.	The teacher utilizes the knowledge gained through wide reading to increase effectiveness to teaching	32.89	8.11	0.0113*
8.	The teacher delivers the subject matter effectively with clarity and coherence	39.12	6.91	0.0472*
9.	The teacher provides additional material apart from textbook	27.07	12.13	0.0891
10.	The teacher gives citations regarding current situation with reference to Indian context	29.15	13.27	0.0751
11.	The teacher makes the best use of multi-media tools for effective teaching	36.67	7.77	0.0116*
12.	The teacher is responsive to students' questions	38.44	7.13	0.0231*
13.	The teacher is sensitive to students' problems	30.03	5.91	0.0678*
14.	The teacher shows respect towards students and encourages class participation	32.11	8.89	0.0237*
15.	Teachers pays attention to all students irrespective of their abilities or personal characteristics	34.81	7.97	0.0342*
16.	The teacher has high enthusiasm	31.27	10.11	0.0211*
17.	The teacher regards teaching as noble profession and has cultivated and imbibed a code of conduct, vocabulary and a disposition worthy of a noble profession	35.55	8.76	0.0376*
18.	The teacher is receptive to new ideas and disagreement	28.67	13.11	0.0413*
19.	The teacher is able in directing discussion	36.52	10.04	0.0399*
20.	Teacher identifies weakness and strengths of students and use it for future planning	28.77	9.97	0.0412*
21.	The teacher is fair in grading	41.56	5.76	0.0431*
22.	The teacher returns and shows the graded scripts in reasonable amount of time	35.70	3.77	0.0124*
23.	The teacher is available during specified official hours and for after class consultations	27.17	7.45	0.0316*
24.	The teacher organizes remedial teaching in order to overcome students weakness	30.84	13.67	0.0975
25.	The teacher extends full cooperation in co-curricular activities and make constructive contribution for further improvement	27.66	6.67	0.6721
26.	The syllabus clearly states course objectives, requirements, procedures and grading criteria	41.23	5.55	0.0012**
27.	The course integrates theoretical course concepts with real world applications	38.53	5.43	0.0369*
28.	The assignments and exams covers the materials presented in course	44.61	4.89	0.0023**
29.	The course material is modern and updated	25.34	6.99	0.0475*
30.	The credit hour allotted to the course are sufficient	37.50	4.01	0.8122
31.	The subject matter presented in the course has increased your knowledge of the subject	40.03	10.33	-
32.	Overall, the teaching of the course is effective	36.54	7.80	-
33.	Overall, the teacher is one of the best and have essential teaching skills	31.39	6.54	-

\*significant at 0.05 % level, \*\*significant at 0.01 % level





**Figure 1: Teaching Effectiveness Framework Based on Significant Teacher's Attributes**

## CONCLUSIONS

Due to the number of universities experiencing difficulty in achieving academic excellence and witnessing low teaching effectiveness, it is becoming increasingly important to determine what attributes of a teacher affect overall teaching effectiveness. To better understand this question, the attributes of teachers were examined and teachers were categorized along with the association of those attributes with overall teaching effectiveness.

It was found that teachers were performing better in four attributes namely teacher preparedness, teacher's fairness, teaching pedagogy of course, and course characteristics as compared to another four attributes namely teacher's attitude towards students, teacher's attitude towards teaching, teacher's creativity and teacher's availability to students. Specifically, it was revealed that all attributes were found to be positively correlated with overall teaching effectiveness with two attributes, teacher preparedness and course characteristics were found highly significant (associated with overall teaching effectiveness at 0.01 % level).

Based on the conclusions from this study, some recommendations were formulated for teachers and teacher training institutions. However, these suggestions are not restricted to teachers and teacher training institutions in India, since the conclusions of this study concur also with other studies concerning the teaching attributes of teachers. The results of this study can also be useful for policymakers around the world, who are addressing the issues of recruitment and retention of teachers, structuring their works, improving teacher training system, and trying to develop effectiveness of teaching. In summary, the most important recommendations of this study are listed below:

- Teachers should consider all teachers attributes and attempt to increase their performance in those attributes, where students have perceived them comparatively low.
- Teachers can consider teaching effectiveness framework developed from the outcomes of present study, and can use it as cross reference for their overall preparation, so that teaching effectiveness can be further enhanced.
- Teacher training institutions should concentrate on teacher's attributes revealed by this study, and should try to develop capacity of teachers in these attributes.
- Authorities in universities should include these attributes in their teacher's evaluation process, and should generate relevant data to further investigate and improve the process of teacher's evaluation.

The purpose of this study was to investigate the teacher's attributes of teachers in Indian agricultural university, to

find association of teacher's attributes with overall teaching effectiveness and to frame a teaching effectiveness framework. Accordingly, we tried to make a useful contribution to the teacher education literature. Although many studies have been carried out on teaching effectiveness and factors affecting it, this study can make an important contribution to the field in three ways. Firstly, it will help existing teachers to assess themselves with the help of teacher's attributes generated by this study. Secondly, teachers can cross check their teaching preparation by comparing their strategy with teaching effectiveness framework developed by this study, and thirdly authorities can utilize the present finding and teaching effectiveness framework in their teacher's evaluation process.

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